

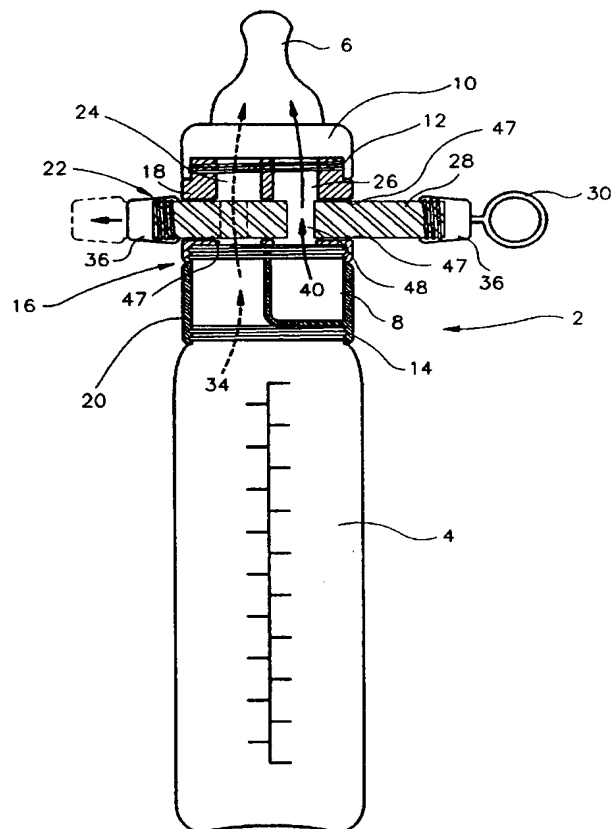


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(54) Title: IMPROVEMENTS IN INFANT FEEDERS AND FEEDER ACCESSORIES**(57) Abstract**

An infant feeder comprising a first fluid receptacle (4), a second fluid receptacle (8), and a teat (6), wherein fluid from both the first and second receptacles can pass through the teat (6). Valve means (22) determine which of the receptacles (4), (8) communicate with the teat (6).



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**IMPROVEMENTS IN INFANT FEEDERS
AND FEEDER ACCESSORIES**

This invention relates to an infant feeder, and an infant feeder accessory. In particular, this invention relates to an infant feeder and accessory, for feeding an infant unpleasant-tasting substances while causing minimum distress.

Administrating unpleasant tasting substances, more specifically medicines, to small children and infants can be a difficult and distressing task. The procedures often traumatize the infant, who is already unwell. Furthermore, the infant learns to recognize the applicator used to administer the medicine, thus causing the infant to resist even before the medicine is administered. Spillage often occurs, and the required dose of medicine may not be administered. Furthermore, the procedure often requires two persons, one to retain the child, and one to administer medicine.

The object of the present invention is to overcome the above difficulties or disadvantages or at least to provide the public with a useful choice.

In a first embodiment, the present invention consists of an infant feeder comprising a first fluid receptacle, a second fluid receptacle, and a teat, wherein fluid from both the first and second receptacles can pass through the teat.

Preferably, the flow of fluid from either one or

both of the first and second receptacles may be regulated by a valve.

In a second embodiment, the invention consists in an infant feeder accessory comprising at least one fluid receptacle, and attachment means to attach the accessory to an infant feeder.

Preferably, a valve means is provided to regulate the flow of fluid from the fluid receptacle.

Suitably, the infant feeder is a bottle and teat, and the infant feeder accessory is attached between the bottle and the teat.

The invention will now be described by way of example with reference to the accompanying drawings, in which:

Figure 1 is a first embodiment of an infant feeder in accordance with the invention showing the infant feeder accessory in cross-section;

Figure 2 is a partial cross-section of the infant feeder accessory of figure 1;

Figure 3 is a second embodiment of an infant feeder in accordance with the invention showing the infant feeder accessory in cross-section;

Figure 4 is a partial cross-section of the infant feeder accessory of figure 3;

Figure 5 is a third embodiment of an infant feeder in accordance with the invention; and

Figure 6 is a side view of part of the valve for use in the infant feeders of Figures 1 to 5.

Referring to Figures 1 to 4 of the drawings, an accessory 16 is shown, adapted for use with an infant feeder shown generally at 2, which in this case is a bottle 4, teat 6 and teat base 10. The accessory 16 is provided with attachment means, such as screw threads 12 and 14 to attach it to the feeder 2, preferably between the bottle 4 and teat base 10.

A first embodiment of the invention is shown in Figures 1 and 2. The feeder comprises a first fluid receptacle suitably being the bottle 4, and a second fluid receptacle 8. The feeder also has first and second channels 24 and 26. The first channel 24, communicates with the first receptacle 4, and the second channel 26 communicates with the second receptacle 8. Both the channels 24 and 26 communicate with the teat 6 via the teat base 10.

The flow of fluid through the channels 24 and 26 is preferably regulated by a shuttle valve 22. The shuttle valve 22 has a shuttle arm 28 having a single aperture 48, which in a first position allows fluid to flow from the first receptacle 4 through the first channel 24 to the teat 6; in a second position, allows fluid to flow from both the first and second receptacles 4 and 8 through the first and second channels 24 and 26 to the teat 6; and in a third position, allows fluid to flow from the second receptacle 8

through the second channel 26 to the teat 6.

The shuttle valve 22 is conveniently provided with a shuttle handle 30 to aid in the movement manually of the shuttle arm 28 between the first, second and third positions. The shuttle ends 36 may act as stops to limit the movement of the shuttle arm 28. The ends 36 are conveniently detachable so that the shuttle arm 28 may be removed for easy sterilisation of the accessory 16.

As shown in figure 6, the shuttle arm 28 preferably includes grooves 46 for receiving O-rings (see 47 in Figure 1) to prevent leakage of fluid from the accessory 16. The grooves 46 and O-rings 47 are arranged along the shuttle arm 28 so that at no time during use of the accessory 16, do the O-rings 47 pass inside the outer side wall of either of the channels 24 and 26, or become disengaged from the accessory 16. In this way, they perform a sealing function at all times, and in particular a sealing function in the first, second and third positions. The O-rings 47 may be detachable from within the grooves 46 only for sterilization of the shuttle arm 28.

The whole accessory 16 may be formed in two halves 18 and 20 separated by a gasket (not shown), again for easy dismantling and sterilisation.

The accessory 16 has the significant advantage that it can be adapted to be used with existing infant feeders.

In use, the infant will suck on the teat 6, and when

the shuttle valve 22 is in its first "milk" position (shown dotted in Figure 1), the infant will receive the fluid from the first receptacle 4 through the teat 6 as shown by arrow 34. Preferably, the first receptacle 4 contains milk, a milk substitute or any other pleasant-flavoured substance which the infant likes. When the shuttle valve 22 is moved to its second intermediate "mixture" position, a mixture of the fluid in the first receptacle 4 and the fluid in the second receptacle 8 is delivered through the teat 6 to the infant. The second receptacle 8 preferably contains a medicinal substance. The amount of medicinal substance delivered to the infant can be regulated by moving the shuttle arm 28. Thus, if the infant is becoming distressed as a result of the unpleasant flavour of the medicine, the flow of medicinal substance can be either reduced or attenuated. Conversely, if the infant is showing no distress, the flow of medicinal substance may be increased and the flow of milk or such like may be completely attenuated by moving the shuttle valve 22 to its third "medicine" position (as shown in Figure 1) in which the baby receives only the medicinal substance from the second receptacle 8 through the teat 6 as shown by arrow 40.

In this way, the full required dosage of medicine can be administered with minimum distress to the infant. Furthermore, as infants are generally familiar with a suckable feeding device, they are less likely to reject the device as they

would with other medicine applicators. Even for infants who are not familiar with using a teat feeder, the sucking instinct in infants will make them accept this type of feeder more readily than other types of medicine applicators.

5 In a second embodiment of the invention shown in Figures 3 and 4, the second receptacle 8 containing, preferably, a medicinal substance, is positioned so that it may be easily changed. For example, there may be cases where an infant requires two different types of medicinal substances, one after the
10 other. The embodiment shown in Figure 3 would allow for an easy substitution of receptacle 8 with another receptacle. In this embodiment, a single on/off valve 42 is sufficient with the flow of medicine being regulated by, preferably, turning a valve arm 28. As in the first embodiment, the valve arm 28 preferably
15 comprises removable ends 36 so that the valve arm may be easily removed for sterilisation. Again, the accessory shown in Figure 3 comprises attachment means, being screw threads 12 and 14 to attach the accessory 16 to a feeder, in this case, a bottle 4 and teat base 10 connected to a teat 6. When the valve 42 is opened, the
20 medicine will flow from the receptacle 8 through the neck 44 of both the accessory and bottle, to the teat 6 as shown by arrow 34. At the same time, a pleasant-flavoured substance such as milk from the bottle 4 flows through the neck 44 of both the accessory and bottle, to the teat 6 as shown by arrow 40.

The embodiment of Figures 1 and 3 can be also used with different sizes of receptacles 8 in order to cope with different doses of medicine.

A third embodiment of the invention is shown in Figure 5. In particular, a disposable version of an infant feeder 50 is shown with a bottle 52, teat 54 and teat base 56.

The bottle 52 is divided into two compartments, namely, a first fluid receptacle 58 for milk or the like, and a second fluid receptacle 60 for medicine or the like. In this arrangement, both fluid receptacles 58 and 60 are integrally formed in the bottle 52, whereby they are permanently provided for full time medical applications such as use in a hospital.

Both fluid receptacles 58 and 60 are provided with fluid channels 24 and 26 in order to communicate the fluids receptacles with the teat 54. The flow of fluid through the channels is preferably controlled by a valve 22 similar but simpler to that shown in either Figure 1 or 3. The valve 22 shown in Figure 5 is mounted within the top of the bottle itself. Alternatively, the valve 22 is mounted within a removable housing (similar to Figure 1 or 3).

In an embodiment not shown, the flow of fluid through the channels is controlled by a pump mechanism (rather than by the valve), which on say pressing of a button by a user, causes medicine to be pumped to the teat.

The embodiments of Figures 1 to 6 can all be used with different sizes of bottles, so as to accommodate different doses of milk and the like.

5 In the embodiments of Figures 1 to 6, the receptacles for milk and the like and medicine are both made of transparent material whereby the level of fluid therein can be easily monitored. Suitably, the infant feeders of Figures 1 to 6 are made of polypropylene or polycarbonate (for safety standards), save for the O-rings and gaskets which are made of silicone.

10 In an alternative not shown, instead of O-rings and grooves, small humps in the valve housing of the feeders could be provided to engage in a sealing manner with the valve arm. In this option, the valve housing should be made of polypropylene rather than polycarbonate, since it is a softer material.

15 Wherever possible, any corner in the feeders of Figures 1 to 6 which comes into contact with fluid is rounded as much as possible, for instance, the "outer" corner of the receptacle 8 of the feeder of Figure 1, and the "sloped" inner walls of the necks of the receptacles 58 and 60 of the feeder of
20 Figure 5, are all rounded.

The embodiments of Figures 1 to 6 are preferably used for infant human beings, however, such could also be applicable to other infant animals (e.g. calves, tiger cubs) which are ill or need special care.

The above describes preferred embodiments of the invention, variations and modifications in which may be made without departing from the scope of the invention as claimed in the following claims.

CLAIMS :

1. An infant feeder comprising a first fluid receptacle, a second fluid receptacle, and a teat, wherein fluid from both the first and second receptacles can pass through the teat.
2. An infant fluid feeder as claimed in claim 1, wherein the fluids from the first and second receptacles mix before passing through the teat.
3. An infant fluid feeder as claimed in either claim 1 or claim 2 wherein the flow of fluid from either one of the first and second receptacles is regulated by valve means.
4. An infant fluid feeder as claimed in claim 3, wherein the valve means occludes flow of fluid from either one of the first and second receptacles.
5. An infant fluid feeder as claimed in any preceding claim wherein one of the receptacles is filled with a pleasant-flavoured substance, and the other is filled with a medicinal substance.
6. An infant fluid feeder as claimed in any preceding claim wherein at least one of the receptacles is a bottle.
7. An infant fluid feeder accessory comprising at least

one fluid receptacle, and attachment means to attach the accessory to an infant feeder.

8. An infant fluid feeder accessory as claimed in claim 7 wherein the accessory further comprises a valve means to regulate the flow of fluid from the fluid receptacle.
9. An infant fluid feeder accessory as claimed in either claim 7 or claim 8, wherein the fluid receptacle contains a medicinal substance.
10. An infant fluid feeder accessory as claimed in any one of claims 7 to 9 further comprising means which allow fluid from a fluid feeder and fluid from the fluid receptacle to mix.
11. An infant fluid feeder comprising a bottle and teat arrangement, and an infant feeder accessory as claimed in any of claims 7 to 10 attached between the bottle and the teat.
12. An infant fluid feeder as claimed in either claim 11, wherein the bottle contains fluid, and the fluid in the bottle and the fluid in fluid receptacle, mix before passing through the teat.
13. An infant fluid feeder as claimed in either claim 11 or claim 12 wherein the fluid receptacle contains a medicinal substance, and the bottle contains a

pleasant-tasting substance.

14. An infant fluid feeder accessory substantially as herein described with reference to any embodiment disclosed in the accompanying drawings.
15. An infant fluid feeder substantially as herein described with reference to any embodiment disclosed in the accompanying drawings.

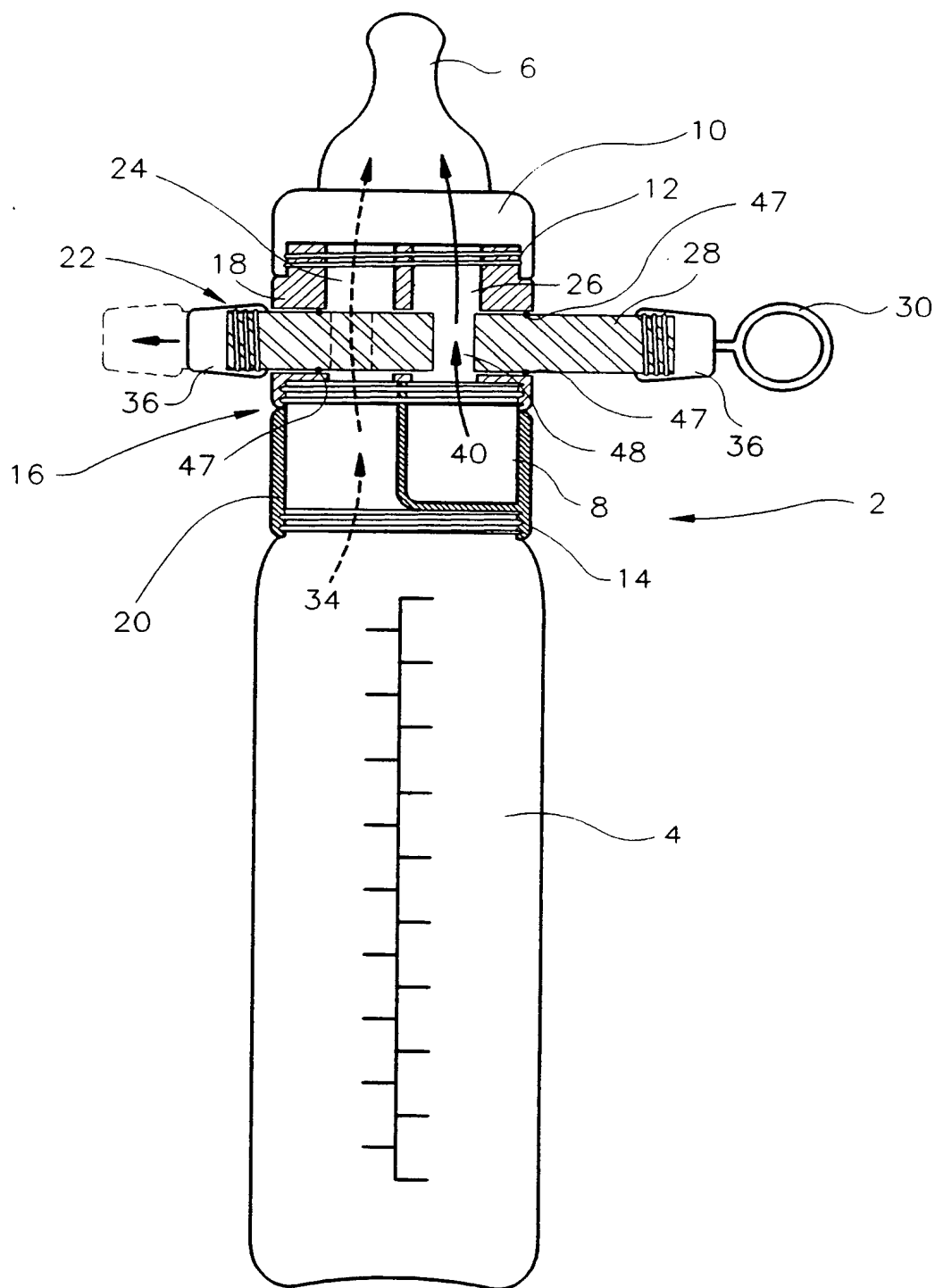


FIG. 1

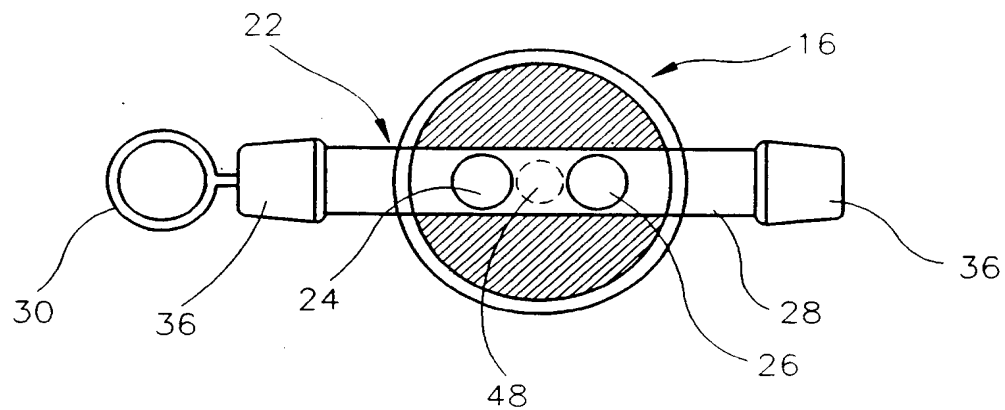


FIG. 2

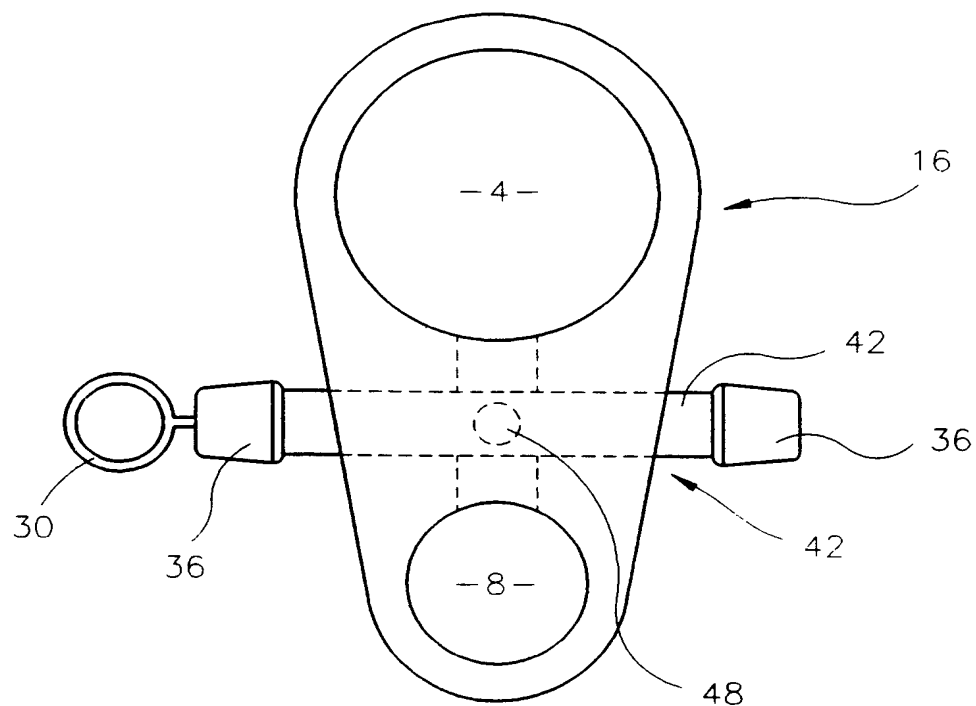


FIG. 4

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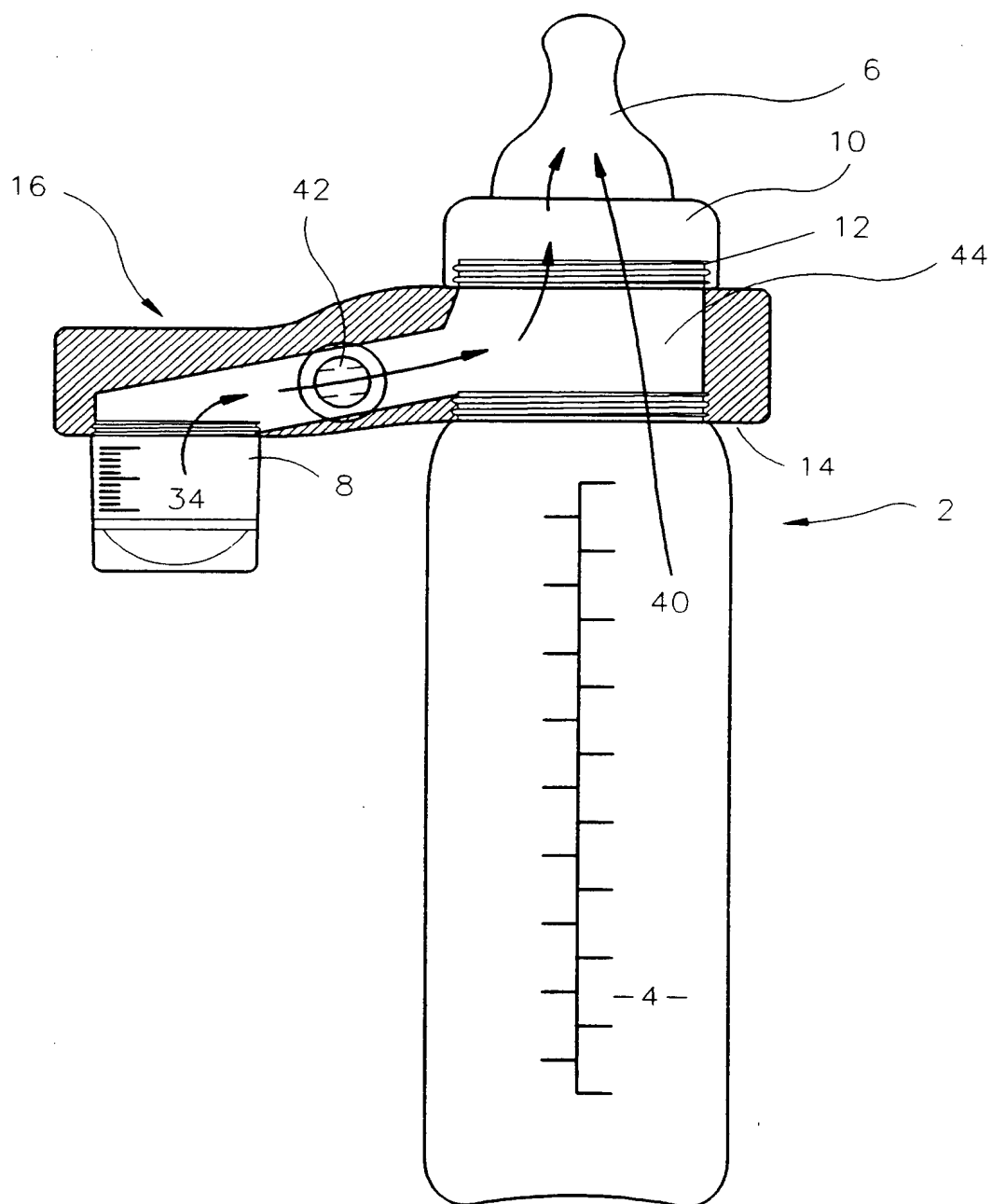


FIG. 3

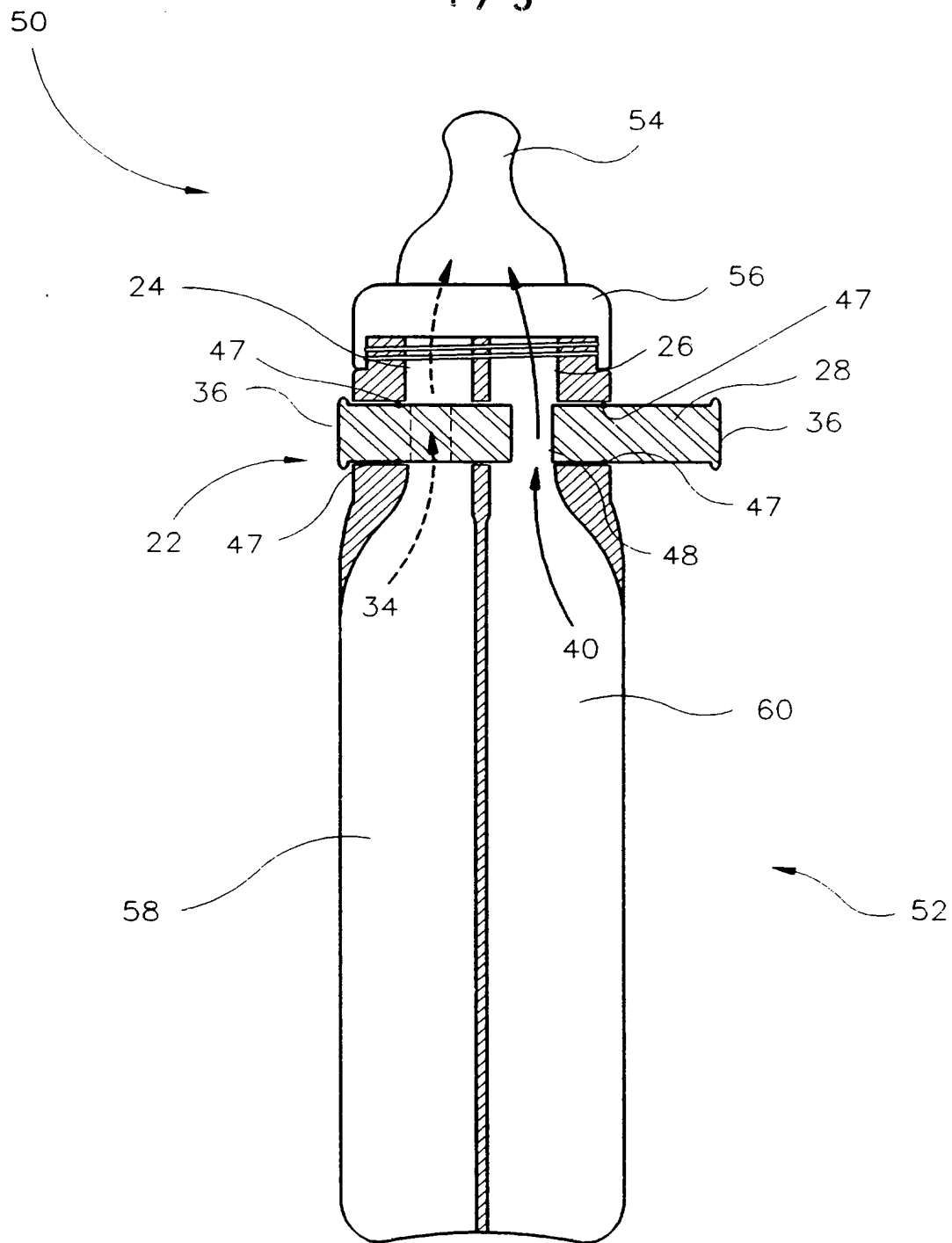


FIG. 5

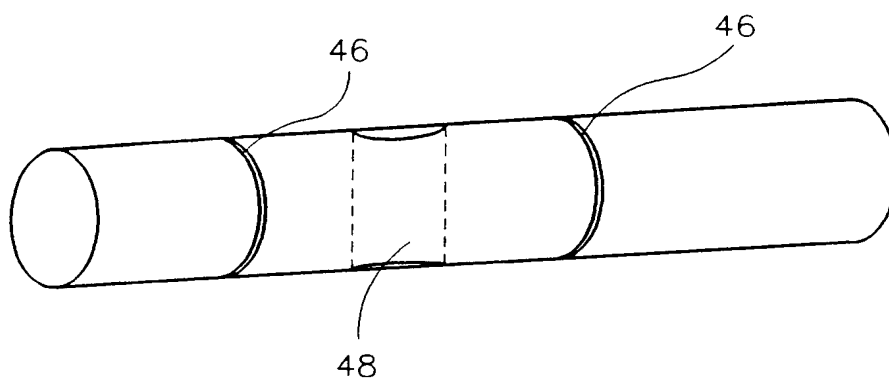


FIG. 6

INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU 95/00116

A. CLASSIFICATION OF SUBJECT MATTERInt. Cl.⁶ A61J 9/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A61J 9/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to Claim No.
X	US 2680441 A (KRAMMER) 8 June 1954 (08.06.54) column 1 line 40 - column 2 line 23	1, 5-7, 9, 11, 13
X	US 4703863 A (KOHUS) 3 November 1987 (03.11.87) column 3 lines 29-40, figure 3	1, 2, 5-7, 9-13
X	US 5060811 A (FOX) 29 October 1991 (29.10.91) column 2 lines 56-62	1, 3-6

Further documents are listed
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Date of the actual completion of the international search

12 April 1995 (12.04.95)

Date of mailing of the international search report

24 May 1995 (24.05.95)

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate of the relevant passages	Relevant to Claim No.
X	US 4856995 A (WAGNER) 15 August 1989 (15.08.89) figures 2 and 3	1, 3-9, 11, 13
X	US 4603784 A (CHANG) 5 August 1986 (05.08.86) figure 1	7, 9, 11, 13
X	US 4502603 A (HSU) 5 March 1985 (05.03.85) column 2 lines 4-28	7, 9
A	US 4971211 A (LAKE) 20 November 1990 (20.11.90) figure 1	1

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This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

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